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November 21, 1977

BAY AREA AIR POLLUTION CONTROL DISTRICT

INSTITUTE OF GOVERNMENTAL
STUDIES LIBRARY

Proposed Amendments to Regulation 3

DEC 21 1977

UNIVERSITY OF CALIFORNIA

(a) No person shall place, store or hold in any stationary tank, reservoir or other container of more than 150,000 liters (39,630 gallons) capacity, any organic liquid having a true vapor pressure of 77.5 mm Hg (1.5 psi) absolute or greater under actual storage conditions, unless such tank, reservoir or other container is a pressure tank maintaining working pressures sufficient at all times to prevent organic vapor or gas loss to the atmosphere, or is designed and equipped with one of the following vapor loss control devices, properly installed, properly maintained and in good operating order:

(1) A floating roof, consisting of AN INSULATED FLOATING PAN-TYPE INSTALLED BEFORE AUGUST 1, 1977, OR A FLOATING PAN-TYPE INSULATED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AIR POLLUTION CONTROL OFFICER PRIOR TO AUGUST 1, 1978, OR a pontoon-type or double-deck-type cover that rests on the surface of the liquid contents and is equipped with a closure device between the tank shell and roof edge. Except as provided in paragraphs (a)(i)(C) and (D), the closure device shall consist of two seals, one above the other; the one below shall be referred to as the primary seal, and the one above shall be referred to as the secondary seal. Seal designs shall be submitted to the Air Pollution Control Officer and shall not be installed or used unless they are approved by the Air Pollution Control Officer as meeting the criteria set forth in paragraphs (a)(1)(A) through (a)(1)(D), as applicable.

(A) For a closure device on a welded tank shell which uses a metallic shoe-type seal as its primary seal:

(i) Gaps between the tank shell and the primary seal shall not exceed 3.8 centimeters (1-1/2 inches) for an accumulative length of 10 percent, 1.3 centimeters (1/2 inch) for another 30 percent, and 0.32 centimeters (1/8 inch) for the remaining 60 percent of the circumference of the tank. No gap between the tank shell and the primary seal shall exceed 3.8 centimeters (1-1/2 inches). No continuous gap greater than 0.32 centimeters (1/8 inch) shall exceed 10% of the circumference of the tank.

(ii) Gaps between the tank shell and the secondary seal shall not exceed 0.32 centimeters (1/8 inch) for an accumulative length of 95 percent of the circumference of the tank, and shall not exceed 1.3 centimeters (1/2 inch) for an accumulative length of the remaining 5 percent of the circumference of the tank. No gap between the tank shell and the secondary seal shall exceed 1.3 centimeters (1/2 inch).

(iii) Metallic shoe-type seals installed on or after January 1, 1978 shall be installed so that one end of the shoe extends into the stored liquid and the other end extends a minimum vertical distance of 61 centimeters (24 inches) above the stored liquid surface.

(iv) The geometry of the shoe shall be such that the maximum gap between the shoe and the tank shell is no greater than double the gap allowed by the seal gap criteria for a length of at least 46 centimeters (18 inches) in the vertical plane above the liquid surface. There shall be no holes or tears in, or openings which allow the emission of organic vapors through the secondary seal or in the primary

seal envelope surrounding the annular vapor space enclosed by the roof edge, stored liquid surface, shoe, and seal fabric. (A typical metallic shoe-type seal with a pantagraph-type hanger is shown in Figure 1. This sketch is for illustrative purposes only and does not constitute endorsement of any product or company.)

(v) The secondary seal shall allow easy insertion of probes up to 3.8 centimeters (1-1/2 inches) in width in order to measure gaps in the primary seal.

(vi) The secondary seal shall extend from the roof to the tank shell and shall not be attached to the primary seal.

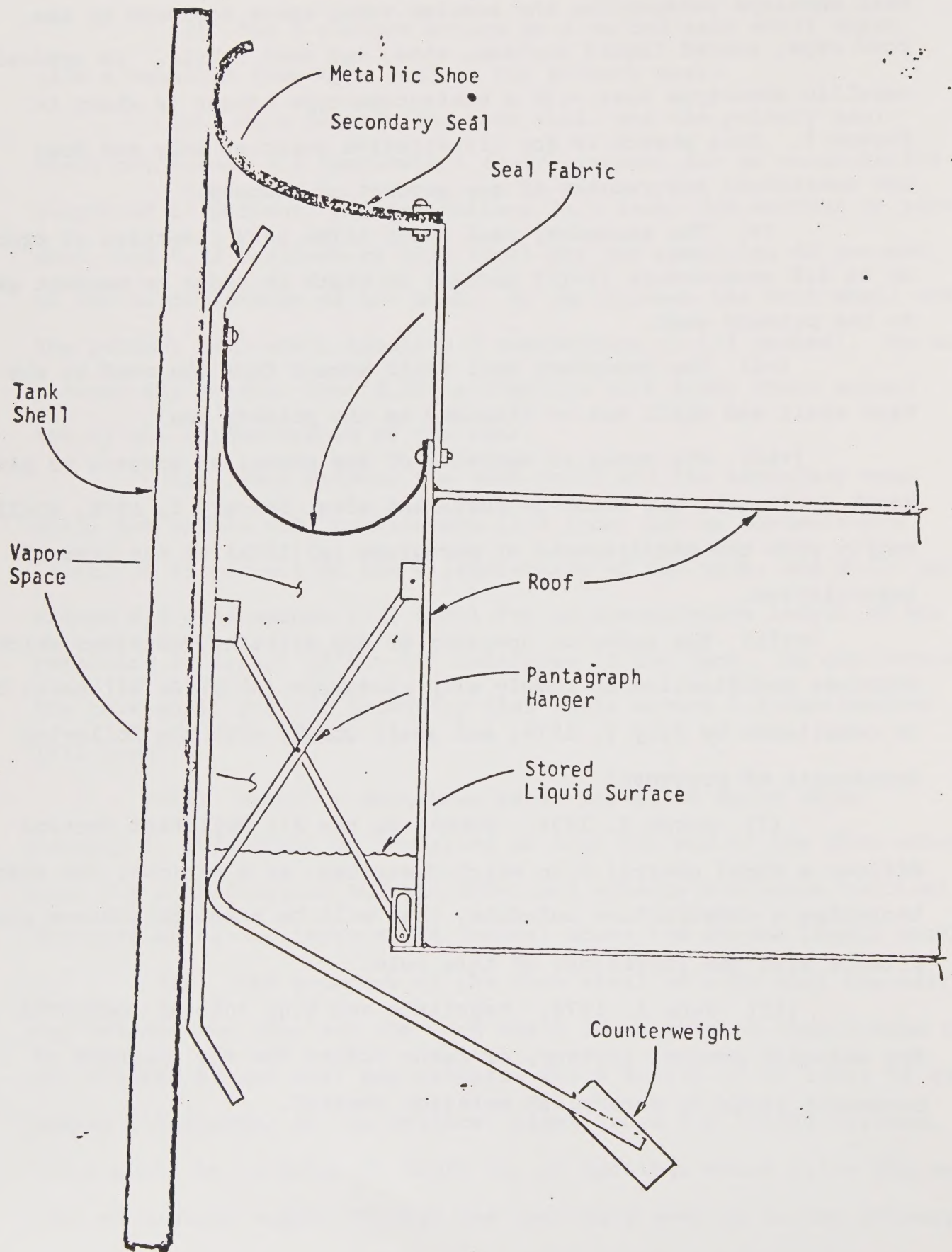
(vii) The owner or operator of any container subject to paragraph (a)(1)(A), and which is installed after January 1, 1978, shall comply with the requirements of paragraph (a)(1)(A) at the time of installation.

(viii) The owner or operator of any existing container which requires modification to comply with paragraph (a)(1)(A)(ii) shall be in compliance by July 1, 1979, and shall comply with the following increments of progress:

(I) March 1, 1978. Submit to the Air Pollution Control Officer a final control plan which describes, as a minimum, the steps, including a construction schedule, that will be taken to achieve compliance with the provisions of this rule.

(II) June 1, 1978. Negotiate and sign initial contracts for emission control systems, or issue orders for the purchase of component parts to accomplish emission control.

Figure 1
Metallic-Shoe-Type Seal



(III) July 1, 1978. Initiate on-site construction or installation of emission control equipment as indicated on the construction schedule submitted with the final control plan.

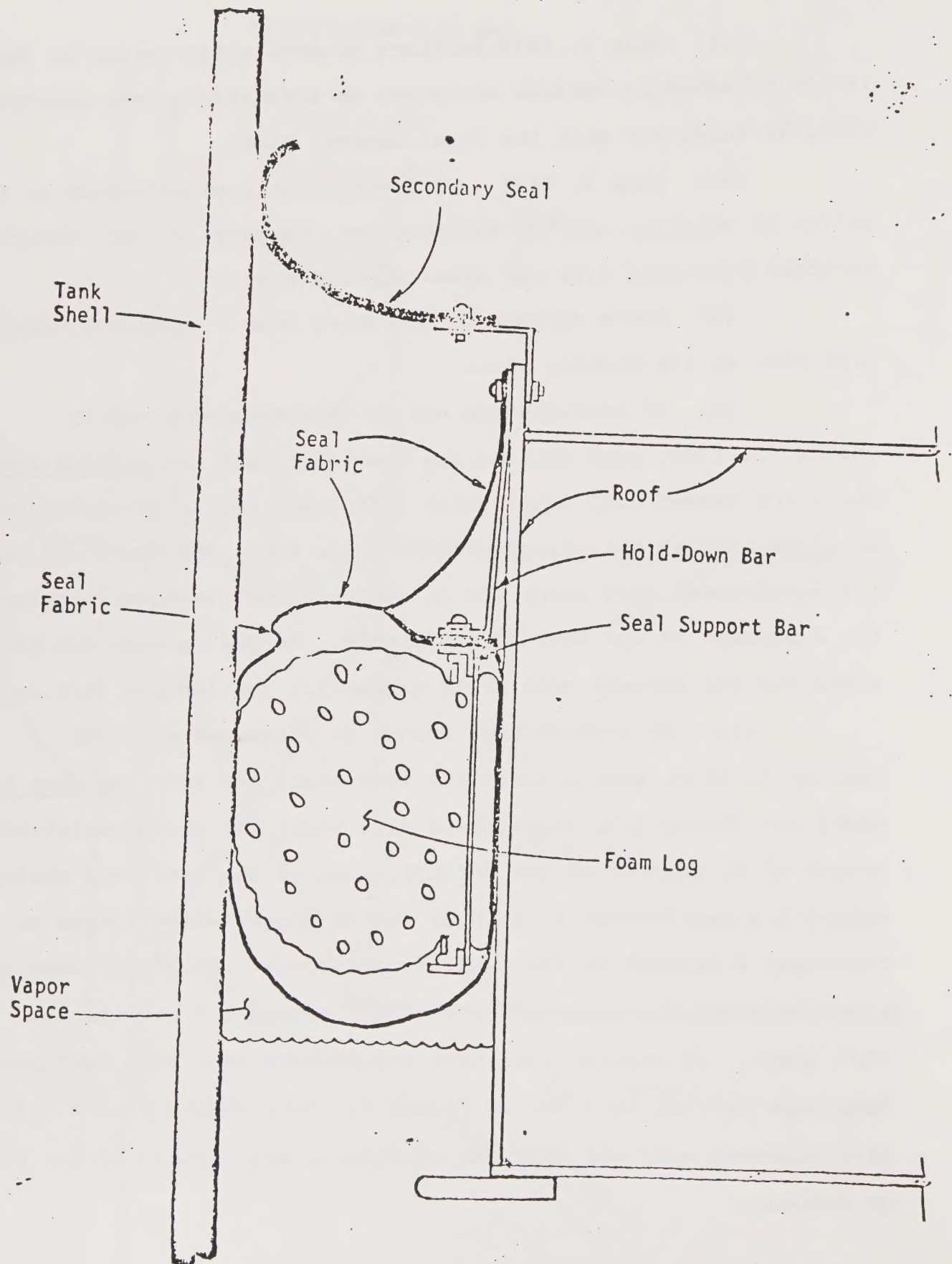
(IV) July 1, 1979. Complete on-site construction or installation of emission control equipment as indicated on the construction schedule submitted with the final control plan.

(B) For a closure device which uses a resilient toroid-type seal as its primary seal:

(i) If installation was or is commenced prior to January 1, 1979, gaps between the tank shell and the primary seal shall not exceed 0.32 centimeters (1/8 inch) for an accumulative length of 95 percent of the circumference of the tank, and shall not exceed 1.3 centimeters (1/2 inch) for an accumulative length of the remaining 5 percent of the tank circumference. No gap between the tank shell and the primary seal shall exceed 1.3 centimeters (1/2 inch).

(ii) If installation was or is commenced prior to January 1, 1979, gaps between the tank shell and the secondary seal shall not exceed 0.32 centimeters (1/8 inch) for an accumulative length of 95 percent of the circumference of the tank, and shall not exceed 1.3 centimeters (1/2 inch) for an accumulative length of the remaining 5 percent of the tank circumference. No gap between the tank shell and the secondary seal shall exceed 1.3 centimeters (1/2 inch). (A typical resilient toroid-type seal with resilient foam-type filling is shown in Figure 2. This sketch is for illustrative purposes only and does not constitute endorsement of any product or company.)

Figure 2
Resilient-Toroid-Type Seal



(iii) If installation is commenced after January 1, 1979, the tank owner or operator shall, prior to installation, demonstrate to the Air Pollution Control Officer that the closure device controls vapor loss with an effectiveness equivalent to a closure device on a welded tank which meets the requirements of paragraph (a)(1)(A). The Air Pollution Control Officer shall determine whether equivalence exists in accordance with paragraph (a)(1)(D). If equivalence is demonstrated using primary or secondary seal gap criteria (if any) different from the criteria specified in paragraphs (a)(1)(B)(i) or (ii), those criteria shall be controlling for all purposes of this rule in lieu of the criteria specified in paragraphs (a)(1)(B)(i) and (ii).

(iv) There shall be no holes or tears in, or openings which allow the emission of organic vapors through the secondary seal or in the primary seal envelope surrounding the annular vapor space enclosed by the roof edge, seal fabric and secondary seal.

(v) The secondary seal shall allow easy insertion of probes up to 3.8 centimeters (1-1/2 inches) in width in order to measure gaps in the primary seal.

(vi) The secondary seal shall extend from the roof of the tank shell and not be attached to the primary seal.

(vii) The owner or operator of any existing container which requires modification to comply with paragraph (a)(1)(B)(ii) shall comply with the schedule of increments of progress and final compliance date set forth in paragraph (a)(1)(A)(viii).

(C) For a closure device on a riveted tank shell which uses a metallic shoe-type seal as its primary seal:

(i) Effective January 1, 1978, the closure device shall consist of at least one seal. Gaps between the tank shell and the seal shall not exceed 6.4 centimeters (2-1/2 inches) for an accumulative length of 10 percent of the circumference of the tank, and shall not exceed 3.8 centimeters (1-1/2 inches) for an accumulative length of the remaining 90 percent of the circumference of the tank. No gap between the tank shell and the seal shall exceed 6.4 centimeters (2-1/2 inches). In addition, any existing secondary seal or other vapor loss control device shall remain in place and comply with the same gap criteria.

(ii) EFFECTIVE JANUARY 1, 1979, THE CLOSURE DEVICE SHALL CONSIST OF TWO SEALS, ONE ABOVE THE OTHER; THE ONE BELOW SHALL BE REFERRED TO AS THE PRIMARY SEAL, AND THE ONE ABOVE SHALL BE REFERRED TO AS THE SECONDARY SEAL. THE GAP REQUIREMENTS OF THE SECONDARY SEAL SHALL BE THE SAME AS DESCRIBED IN C(i) ABOVE.

(ii) (a): ON OR BEFORE JULY 1, 1980, PERSONS SUBJECT TO ALL OF THE REQUIREMENTS OF PARAGRAPH (C) RELATING TO RIVETED TANKS SHALL SUBMIT TO THE AIR POLLUTION CONTROL OFFICER DATA SHOWING THAT THE VAPOR CONTROL ON SUCH TANKS IS EQUIVALENT TO THE VAPOR CONTROL REQUIRED ON WELDED TANKS AS DESCRIBED IN (a) (1) (A). THE AIR POLLUTION CONTROL OFFICER SHALL DETERMINE WHETHER SUCH EQUIVALENCE EXISTS. SUCH EQUIVALENCE DETERMINATION SHALL TAKE INTO CONSIDERATION THE MEASUREMENT ERROR NORMALLY ASSOCIATED WITH THE DETERMINATION OF EMISSIONS FROM STORAGE TANKS.

(ii) (b): IF THE AIR POLLUTION CONTROL OFFICER DETERMINES THAT THE VAPOR CONTROL IS NOT EQUIVALENT TO THE VAPOR CONTROL REQUIRED ON WELDED TANKS AS DESCRIBED IN (a) (i) (A), THE AIR POLLUTION CONTROL OFFICER SHALL REQUIRE THAT PERSONS SUBJECT TO THE REQUIREMENTS OF PARAGRAPH (C) RELATING TO RIVETED TANKS SUBMIT A COMPLIANCE SCHEDULE AS FOLLOWS:

(1) BY JANUARY 1, 1981, SUBMIT A PLAN SHOWING HOW ALL SUCH AFFECTED RIVETED TANKS WILL COME INTO COMPLIANCE WITH THE VAPOR CONTROL REQUIREMENTS OF WELDED TANKS. SUCH TANKS MUST BE APPROVED BY THE AIR POLLUTION CONTROL OFFICER.

(2) BY JULY 1, 1981, COMPLETE INSTALLATION OF ALL EQUIPMENT DESCRIBED IN (1) ABOVE.

(3) IF THE PLANS SUBMITTED IN ACCORDANCE WITH THE REQUIREMENTS OF (1) ABOVE ARE DISAPPROVED BY THE AIR POLLUTION CONTROL OFFICER, ALL RIVETED TANKS SUBJECT TO THE REQUIREMENTS OF PARAGRAPH (C) SHALL BE REPLACED BY WELDED TANKS MEETING THE REQUIREMENTS OF (a) (1) (A) WITHIN A 2 YEAR PERIOD FOLLOWING SUCH DISAPPROVAL.

(iii) Metallic shoe-type seals installed on or after January 1, 1978, shall be installed so that one end of the shoe extends into the stored liquid and the other end extends a minimum vertical distance of 61 centimeters (24 inches) above the stored liquid surface.

The geometry of the shoe shall be such that the maximum gap between the shoe and the tank shell is no greater than double the gap allowed by the seal gap criteria for a length of at least 46 centimeters (18 inches) in the vertical plane. (A typical metallic shoe-type seal with a pantagraph-type hanger is shown in Figure 1. This sketch is for illustrative purposes only and does not constitute endorsement of any product or company.)

(iv) There shall be no holes or tears in, or openings which allow the emission of organic vapors through the envelope surrounding the annular vapor space enclosed by the roof edge, stored liquid surface, shoe, and seal fabric.

(v) Any secondary seal shall allow easy insertion of probes up to 6.4 centimeters (2-1/2 inches) in width in order to measure gaps in the primary seal.

(vi) Any secondary seal shall extend from the roof to the tank shell and shall not be attached to the primary seal.

(vii) The owner or operator of any existing container which requires modifications to comply with paragraph (a)(1)(C)(ii) shall be in compliance by July 1, 1980, and shall comply with the following increments of progress:

(I) January 1, 1979. Submit to the APCO a final control plan which describes, as a minimum, the steps, including a construction schedule, that will be taken to achieve compliance with the provisions of this rule.

(II) May 1, 1979. Negotiate and sign initial contracts for emission control systems, or issue orders for the purchase of component parts to accomplish emission control.

(III) June 1, 1979. Initiate on-site construction or installation of emission control equipment as indicated on the construction schedule submitted with the final control plan.

(IV) July 1, 1980. Complete on-site construction or installation of emission control equipment as indicated on the construction schedule submitted with the final control plan.

(D) The requirements of paragraphs (a)(1)(A) through (a)(1)(C) shall not apply to any person who demonstrates to the Air Pollution Control officer that a closure device has been installed, or is available for installation, which by itself or in conjunction with other vapor loss control devices, controls vapor loss at all tank levels with an effectiveness equivalent to a closure device on a welded tank which meets the requirements of paragraph (a)(1)(A). The owner or operator of any tank with such a system, or proposed to be equipped with such a system, shall, prior to use or installation, demonstrate equivalence to the Air Pollution Control Officer as follows:

(i) By an actual emissions test in a full-size or scale sealed tank facility which accurately collects and measures all hydrocarbon emissions associated with a given closure device, and which accurately simulates other emission variables, such as temperature, barometric pressure and wind. The test facility shall be subject to prior approval by the Air Pollution Control Officer, Or,

(ii) by a pressure leak test, engineering evaluation or other means, where the Air Pollution Control Officer determines that the same is an accurate method of determining equivalence.

(E) The primary seal envelope shall be made available for unobstructed inspection by the Air Pollution Control Officer on an annual basis at locations selected along its circumference at random by the Air Pollution Control Officer. In the case of riveted tanks with toroid-type seals, eight such locations shall be made available; in all other cases, four such locations shall be made available. If the Air Pollution Control Officer detects one or more violations as a result of any such inspection, the Air Pollution Control Officer may require such further unobstructed inspection of the primary seal as may be necessary to determine the seal condition for its entire circumference.

In addition, for tanks with secondary seals installed after January 1, 1978, the primary seal envelope shall be made available for inspection by the Air Pollution Control Officer prior to installation of the secondary seal. Thereafter, and for tanks with secondary seals installed before January 1, 1978, the primary seal envelope shall be made available for unobstructed inspection by the Air Pollution Control Officer for its full length every 5 years after January 1, 1977, except that if the secondary seal is voluntarily removed by the owner or operator prior thereto, it shall be made available for such inspection at that time. The owner or operator shall provide notification to the Air Pollution Control Officer no less than 7 working days prior to voluntary removal of the secondary seal.

IN ADDITION, THE AIR POLLUTION CONTROL OFFICER SHALL REQUIRE THAT A REPORT ON THE SEAL CONDITION AND GAP ALLOWANCES OF PRIMARY AND SECONDARY SEALS AS PRESCRIBED IN THIS REGULATION SHALL BE SUBMITTED AS FOLLOWS:

(1) FOR ALL PRIMARY SEALS, CERTIFICATION OF ACTUAL GAP MEASUREMENTS SHALL BE SUBMITTED UPON INSTALLATION OF SUCH PRIMARY SEALS, REPLACEMENT OF SUCH PRIMARY SEALS, OR PRIOR TO INSTALLATION OF SECONDARY SEALS, AND EVERY 5 YEARS FOLLOWING SUCH INSTALLATION OR REPLACEMENT.

(2) FOR ALL SECONDARY SEALS, CERTIFICATION OF ACTUAL GAP MEASUREMENTS SHALL BE SUBMITTED ON AN ANNUAL BASIS.

ALL REPORTS RELATING TO SEAL CONDITION AND GAP MEASUREMENTS SHALL INCLUDE THE FOLLOWING INFORMATION:

(i) DATE OF INSPECTION.

(ii) ACTUAL GAP MEASUREMENTS BETWEEN THE TANK SHELL AND THE PRIMARY SEALS, MEASURED AROUND THE CIRCUMFERENCE OF THE TANK AT INTERVALS OF 5 PERCENT OF THE CIRCUMFERENCE OF THE TANK.

(iii) ACTUAL GAP MEASUREMENTS BETWEEN THE TANK SHELL AND THE SECONDARY SEALS MEASURED AROUND THE CIRCUMFERENCE OF THE TANK AT INTERVALS OF 25 PERCENT OF THE CIRCUMFERENCE OF THE TANK.

(iv) DATA, SUPPORTED BY CALCULATIONS, SHOWING WHETHER OR NOT THE REQUIREMENTS OF PARAGRAPHS (a)(1)(A)(i), (a)(1)(A)(ii), (a)(1)(A)(iii), (a)(1)(A)(iv), (a)(1)(A)(v) and (a)(1)(A)(vi) ARE BEING MET.

(F) All openings in the roof except pressure-vacuum valves, which shall be set to within ten percent of the maximum allowable working pressure of the roof, shall provide a projection below the liquid surface to prevent belching of liquid and to prevent entrained or formed organic vapor from escaping from the liquid contents of the tank and shall be equipped with a cover, seal, or lid. The cover, seal, or lid shall at all times be in a closed position, with no visible gaps, except when the device or appurtenance is in use.

(G) Any emergency roof drain shall be provided with a slotted membrane fabric cover, or equivalent, that covers at least nine-tenths of the area of the opening.

(H) A floating roof shall not be used if the organic liquid stored has a true vapor pressure of 569 mm Hg (11 psi) absolute or greater under storage conditions.

(2) A fixed roof with an internal-floating-type cover, provided the cover prevents the release or emission to the atmosphere of all organic vapors or gases at an efficiency equivalent to a floating roof closure device which meets the requirements of paragraph (a)(1)(A). The Air Pollution Control Officer shall determine whether equivalence exists in accordance with paragraph (a)(1)(D).

(A) A fixed roof container with an internal-floating-type cover shall not be used if the organic liquid stored has a true vapor pressure of 569 mm Hg (11 psi) absolute or greater under storage conditions.

(B) Any existing fixed roof container which requires modification in order to comply with paragraph (a)(2) shall comply with the schedule of increments of progress and final compliance date set forth in paragraph (a)(1)(C)(vii).

(3)(A) A vapor recovery system, consisting of a system capable of collecting all organic vapors and gases, and a vapor return or disposal system capable of processing such vapors and gases, so as to prevent their emission to the atmosphere at an efficiency of at least 95 percent by weight, if constructed on or after January 1, 1978.

(B) A system constructed before January 1, 1978, shall have a recovery efficiency of at least 90 percent by weight and, by July 1, 1980, a recovery efficiency of at least 95 percent by weight.

(C) Any tank gauging or sampling device on a tank vented to the vapor recovery system shall be equipped with a gas-tight cover which shall be closed at all times except during gauging or sampling.

(D) All piping, valves and fittings shall be constructed and maintained in a gas-tight condition, such that no organic vapor or gas leaks are detectable.

(E) Any container constructed before January 1, 1978, which requires modification in order to comply with the 90% recovery requirement in paragraph (a)(3)(B) shall comply with the schedule of increments of progress and final compliance date set forth in paragraph (a)(1)(A)(viii).

(F) Any container constructed before January 1, 1978, which requires modification in order to comply with the 95 percent recovery requirement in paragraph (a)(3)(B) shall comply with the schedule of increments of progress and final compliance date set forth in paragraph (a)(1)(C)(vii).

(4) Other equipment having a vapor loss control efficiency of at least 95 percent by weight, provided an application for installation of such equipment is submitted to and approved by the Air Pollution Control Officer.

(5) A person whose tanks are subject to paragraph (a) of this rule shall keep an accurate record of liquids stored in such containers and the true vapor pressure ranges of such liquids. The true vapor pressure in psi. absolute of stored liquid may be determined by using the nomographs contained in American Petroleum Institute Bulletin 2517 for conversion of Reid vapor pressure to true vapor pressure.

(b) A person shall not place, store or hold in any above-ground stationary tank, or other container of 150,000 liters (39,630 gallons) or less capacity any gasoline unless such tank is equipped with a pressure-vacuum valve which is set to within ten percent of the maximum allowable working pressure of the container, or is equipped with a vapor loss control device which complies with the requirements set forth in paragraph (a). The provisions of this paragraph shall not apply to any container of 7,570 liters (2,000 gallons) or less capacity installed and in service prior to January 9, 1976, nor to any container of 950 liters (251 gallons) or less capacity installed on or after January 9, 1976.

(c) Efficiency, as used in paragraphs (a)(3) and (4) means a comparison of controlled emissions to those emissions which would occur from a fixed or cone roof tank in the same product service without a vapor control system. Base line emissions shall be calculated by using the criteria outlined in American Petroleum Institute Bulletin 2518.

(d) Any person who cannot comply with a requirement in this rule which takes effect as of a future date, or any schedule of increments of progress herein, shall submit to the Hearing Board a schedule of increments of progress by which compliance will be attained, in accordance with Health and Safety Code Section 41703.

(e) Any revisions or amendments to this rule, past or present, shall not affect the validity of any litigation pertaining to violations of a previous rule governing the storage of organic liquids which also constitute violations of this rule as effective January 1, 1978.



(f) If any portion of this rule shall be found to be unenforceable, such finding shall have no effect on the enforceability of the remaining portions of the Rule, which shall continue to be in full force and effect.